



P/746-4

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:

Confirmation No.: 7418

Frank Henglein, *et al.*

Serial No.: 10/580,120

Group Art Unit: 1793

Filed: September 11, 2006

Examiner: Pegah Parvini

For: EFFECT PIGMENTS HAVING AN ALUMINUM OR ALUMINUM ALLOY CORE,
PROCESS FOR THE PRODUCTION THEREOF AND USE THEREOF

VIA EFS-WEB

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

THIRD 37 C.F.R. §1.132 DECLARATION OF DR. FRANK HENGLEIN

Sir:

I, Frank Henglein, Ph.D, do hereby declare as follows:

1. I am the same Dr. Frank Henglein who authored two previous declarations under 37 C.F.R. §1.132 dated, respectively, September 16, 2008 and April 29, 2009 which, I am informed, have been filed in this application with the United States Patent and Trademark Office by our U.S. patent counsel. My qualifications are as set forth in my September 16, 2008 declaration. This supplemental (third) declaration is being provided to respond to the Examiner's objections to my previous declaration(s) as set forth at p. 17 of the Office Action dated July 7, 2009 and to provide additional evidence that the presently claimed pigment and method are not obvious over certain cited prior art.
2. I have noted the Examiner's statements, on p. 17 and p. 18 of the July 7, 2009 Office Action that my previous declarations filed in this case are no longer applicable due to the fact that a new ground of rejection is made in the pending July 7, 2009 Office Action. Nevertheless, I believe that the evidence presented in my prior declarations (as supplemented herein) convincingly demonstrates the significant differences in the structure and characteristics of an effect pigment produced in accordance with the wet chemical oxidation technique as described in claim 1 of this application versus those of pigments produced by a wet chemical

(sol-gel) coating process in, e.g., U.S. Patent No. 5,624,486 to Schmid et al. cited by the Examiner to support the rejection of the claims of the present application. While I understand that the Schmid et al. '486 patent is no longer the 'primary' reference cited to reject the claims, i.e., the Examiner's new ground of rejection is that certain claims are unpatentable over U.S. Patent No. 5,964,936 to Reisser et al. in view of U.S. Patent No. 5,624,486 to Schmid et al., as evidenced by U.S. Patent No. 6,648,957 to Andes et al., I nevertheless believe that the Examiner should consider the evidence presented in my several declarations, and further, that this evidence should be taken to demonstrate the non-obviousness of the pigments and methods as claimed in the present application over at least the disclosure contained in the Schmid et al. U.S. '486 patent, if not over all of the references now combined by the Examiner to reject the claims of this application.

3. In partial response to the Examiner's objections numbered 1-3 on p. 17 of the July 7, 2009 Office Action, I submit that the wet-chemically oxidized pigment shown in the Scanning Electron Micrograph (SEM) image provided with my declaration dated September 16, 2008 (see Exhibit A) was produced in accordance with the technique as set forth in Example 1 of the present application, further specified at p. 17, lines 25-30: "In a plane-ground reaction vessel of sufficient size, 100 g of aluminum pigment were introduced in the form of a paste with 240 g of isopropanol and dispersed for 10 min. Subsequently, a mixture of demineralized water and base (for amounts see Table1) was added to the vessel. The suspension was heated to just below the boiling point. After a heating time of 7 h, the suspension was allowed to cool. 16 h later, the mixture was filtered off with suction through a Büchner funnel and the filter cake was dried in a vacuum drying oven at 100°C for 6 h with N₂ flushing."
4. Further to the above, attached to this declaration is another SEM image which depicts an aluminum pigment produced according to Comparative Example 6 of the present application via the wet chemical sol-gel coating process as taught in Schmid et al., wherein an organic aluminum compound, i.e., aluminum triisopropylate, was added to a reaction solution (see below) which immediately hydrolyzed upon contact with water. As a result, aluminum oxide/hydroxide was formed and was precipitated on the aluminum pigments. This additional image provides further proof that when one applies an aluminum oxide coating using the sol-gel process (i.e., of Schmid et al.), a smooth surface is obtained. Such smooth

surface, thus, is in contrast to the roughened surface structure produced as a result of wet chemical oxidation (as presently claimed) as shown in the SEM image filed as an attachment to my previous declaration (see Exhibit A).

5. More particularly, the specific conditions used in applying the aluminum oxide coating according to the sol-gel process (i.e., as taught in Schmid et al.) was, as disclosed in the present application at p. 18, lines 7-13: "45 g of Al triisopropylate were placed in a 1 liter reactor, dispersed and dissolved with stirring at an 83°C forerun temperature. 160 g of commercially available Mex 2154 (Eckart, Fürth, Germany) were added and rinsed with a solution of organic base and isopropanol. After a dispersion time of 1h, a mixture of 5.5% of organic base and 94.5% of demineralised water was added dropwise in a stoichiometric ratio. After a 7-hour heating time, the suspension was stirred for 16h, then filtered on a suction filter and the filter cake was dried at 100°C in a vacuum drying oven."
6. As I stated in ¶10 of my declaration dated April 29, 2009, the deposition of precipitating aluminum oxide/hydroxide on the metallic substrate produces a protective layer and, consequently, prevents an oxidation of the metallic substrate (e.g., the aluminum pigment). Therefore, in contrast to pigments formed according to the method recited in our claim no. 1, the surface of a pigment produced according to the sol-gel process taught by the Schmid et al patent is not roughened, i.e., not oxidized. In the absence of the organic compound $Al(OR)_3$, water will react with the aluminum flakes if a basic or acidic catalyst is present, leading to the wet chemical oxidation.
7. Thus, the additional SEM image provided herewith of a pigment coated with Aluminum oxide by the sol-gel process taught for use by Schmid et al. demonstrates, as indicated in ¶4 above, that a smooth surface is obtained on a pigment produced with the process of Schmid et al. which sharply contrasts with the roughened surface produced according to the method recited in, e.g., claim 1 of the present example. This difference is conclusively demonstrated by comparing the attachment to this declaration with Exhibit A of my declaration dated September 16, 2008.
8. I wish to additionally note, in further response to the Examiner's objections set forth on p. 17 of the present Office Action, that the SEM image filed as Exhibit A

to the September 16, 2008 declaration was prepared in accordance with Examples 1-5 of the present application, but without the addition of a further iron oxide coating. Additionally, during the preparation of Comparative Example 6, a subsequently applied iron oxide layer adhered rather poorly and much secondary precipitation occurred (see, e.g., the present application at p. 22, lines 3-5).

9. I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: 10/07/09

By: Frank Henglein
Dr. Frank Henglein



1 μm